

JOHNSON SPACE CENTER SOFTWARE REUSE ACTIVITY

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There is a strong operational interest in reuse and commonality at the Johnson Space Center (JSC). Although commonality and reuse were not emphasized in the Space Shuttle Orbiter Project, it is a major goal for Space Station Freedom and the Software Support Environment (SSE). Research activities at JSC are generally conducted through the Software Engineering Research Center (SERC) of the University of Houston at Clear Lake. The Life Cycle Model developed by SERC includes reuse at each phase, but reuse is not a principal theme. The SSE is a significant entry point for new reuse technology, and the SERC can provide consultation and possible prototypes. SERC is seen as an interface to other NISE reuse researchers. The NASA AdaNET is managed at JSC through the University of Houston at Clear Lake for the NASA Office of Technology Utilization. It may also be a "gateway" for reuse research.

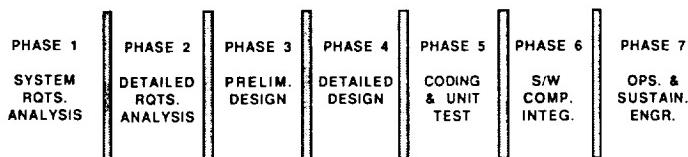
## JSC MANAGED PROJECTS

- ORBITER PROJECT - COMMONALITY & REUSE NOT EMPHASIZED
- SPACE STATION - WORK PACKAGE 2 & SOFTWARE SUPPORT ENVIRONMENT (SSE)
  - COMMONALITY & REUSE A MAJOR GOAL
  - ADA FOR OPERATIONAL SOFTWARE
  - MODELS & SIMULATIONS
  - SAME SSE ACROSS THE PROGRAM
- AdaNET
  - MANAGED AT JSC (THROUGH UHCL) FOR OFFICE OF TECHNOLOGY TRANSFER
- SOFTWARE ENGINEERING RESEARCH CENTER (SERC) ACTIVITY
  - CODE R SUPPORTED
  - NOT A PRINCIPAL THEME AT SERC
  - ADDRESSED IN LIFE CYCLE MODEL
  - CONSULTING & WHITE PAPERS AS REQUIRED

## SOFTWARE REUSE IN THE CLEAR LAKE MODEL

- "CONCEPTUAL AND IMPLEMENTATION MODELS WHICH SUPPORT LIFE CYCLE REUSABILITY OF PROCESSES AND PRODUCTS IN COMPUTER SYSTEMS AND SOFTWARE ENGINEERING"
- "SOLUTION IN THE LARGE"
- SOFTWARE REUSE IS PRESENTED AS SUBSET OF LIFE CYCLE REUSE
- SEVEN LIFE CYCLE PHASES SHOWN - REUSE AT EACH PHASE ADDRESSED
- REUSE CANDIDATES ARE MUCH MORE THAN CODED MODULES
  - REQUIREMENTS
  - SCHEDULES
  - BUDGETS
  - DESIGN
  - TOOLS
  - METHODS
- CONTRASTS WITH CODE COLLECTIONS AS THE BOOCHE OR BERARD COMPONENTS - SINGLE PHASE ONLY

## REUSE OVER THE SOFTWARE LIFE CYCLE



- PHASE 1 - METHODS, SCHEDULES, BUDGETS, DEV. PLANS
- PHASE 2 - METHODS, REQUIREMENTS, INTERFACES
- PHASE 3 - METHODS, DESIGN, TOOLS
- PHASE 4 - METHODS, DESIGN, TOOLS
- PHASE 5 - METHODS, CODE, PACKAGES, STRUCTURE
- PHASE 6 - METHODS, ENVIRONMENT DESIGN, INTERFACES
- PHASE 7 - METHODS, CONFIGURATIONS, TOOLS
- META DATA FOR THESE DIFFERENT PRODUCTS AND PROCESSES WILL BE A CHALLENGE

## JSC SOFTWARE REUSE SUMMARY

- STRONG OPERATIONAL INTEREST IN REUSE & COMMONALITY
- "RUBBER HITS THE ROAD" FOR MANY S/W PROJECTS AT JSC
- SSE IS A SIGNIFICANT ENTRY POINT FOR NEW REUSE TECHNOLOGY
  - SIGNIFICANT REUSE IS MAJOR SSFP& SSE GOAL
  - STRONG INTEREST IN NEW & BETTER APPROACHES
  - SERC AS CONSULTANT & POSSIBLE PROTOTYPER
- SERC AS INTERFACE TO OTHER NISE REUSE RESEARCHERS
- POSSIBLE "GATEWAY" RESEARCH THROUGH AdaNET - BASED ON CLEAR LAKE MODEL WITH SERC AS CONSULTANT
- CRITICAL FOR JSC TO "STAY ON TOP OF" REUSE TECHNOLOGY
  - SERC AS CONSULTANT
  - SSE PROJECT AS OPERATIONAL INTERFACE
  - AdaNET AS INTERFACE TO LARGER Ada & SOFTWARE ENGINEERING COMMUNITY

